RULES AND REGULATIONS PERTAINING TO

PRIVATE DRINKING WATER SYSTEMS

R-23-1-5.3-PDW

RHODE ISLAND DEPARTMENT OF HEALTH

OFFICE OF PRIVATE WELL WATER CONTAMINATION

JUNE 2008

INTRODUCTION

These *Rules and Regulations Pertaining to Private Drinking Water Systems* designed to protect public health by ensuring the drinking water quality of private water supply systems and are promulgated pursuant to the authority conferred to the Director of the State of Rhode Island Department of Health (HEALTH), under sections 23-1-1.23-1-17, and 23-1-18, and in accordance with the duties of the Office of Private Well Water Contamination under section 23-1-5.3 of the General Laws of Rhode Island, as amended.

Pursuant to the provisions of section 42-35-3(c) of the General Laws of Rhode Island, as amended, alternative approaches to the regulations and duplication or overlap with other state regulation were given consideration in arriving at the following rules and regulations. No alternative approach, duplication or overlap, was identified based on available information.

The Office of Private Well Water Contamination (OPWWC) has established these rules and regulations to apply to all private-drinking-water systems, as defined herein, that do not meet the definition of a "public water supplier", or those not covered by more stringent local community definitions. Additionally, these rules and regulations provide direction for local officials regarding local enforcement regarding data reporting requirements.

Additional guidance, both electronic and hard copy will be published regarding the topics addressed within these rules and regulations.

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Section 1.0 ***Definitions***

Wherever used in these rules and regulations the following terms shall be defined as follows:

1.1 ***"Act"*** means Chapter 23-1-5.2 and 5.3 of the General Laws of Rhode Island, as amended.

1.2 ***"Action level"*** means detection of a constituent in drinking water which concentration equals or exceeds 50 % of the HA, MCL, or SMCL and indicates need for further action such as increased monitoring.

1.3 ***"Certified laboratory"*** means an analytical laboratory licensed by the Department under Rhode Island General Law, Chapter 23-16.2 "Laboratories", to perform biological, microbiological, chemical or radiochemical examination of potable water; or laboratory exempt from this law as provided for in 23-16.2-3 but which shall be certified by the State Certification official in accordance with 40 CFR 1422.10b.

1.4 ***"Commercial/mixed use private water supply system"*** means a private supply system that serves a structure(s) consisting of one or more commercial spaces and/or more than four (4) family dwelling units that has been occupied as a dwelling and is under control of a single entity(s).

1.5 **"*Constituent*"** means a chemical or elemental component found in private well water.

1.6 **"*Department*"** means the Rhode Island Department of Health.

1.7 **"Director"** means the Director of the Rhode Island Department of Health

1.8 **"*End-user*"** means that person or persons using the water for consumption or other purposes requiring potable water.

1.9 **"Exceedance"** means a concentration of a constituent that is greater than a standard or recommended upper limit (e.g., MCL) for that constituent.

1.10 **"First Draw"** means a one-liter sample of tap water, collected from a cold-water source. Water for each sample shall have stood motionless in the plumbing system for at least six (6) hours and shall be collected without flushing the tap.

1.11 ***"Global Positioning System (GPS) location"*** means specific geographic locations as determined by satellite signals. GPS locations shall be reported in the appropriate coordinate system (RI State Plane Feet) or in Latitude/Longitude in decimal degrees.

1.12 **"Health Advisory Level (HA**)" means that level recognized by the state for which corrective action should be performed.

1.13 ***"Individual private water supply system"*** means a system that supplies a single or duplex residential unit.

1.14 ***"Interpreter"*** means an individual who has the education/experience necessary to interpret results of water quality analyses and is licensed to do so by the State of Rhode Island.

1.15 ***"Maximum contaminant level (MCL)"*** means the maximum level allowable for a specific drinking water constituent.

1.16 ***"Multi-family residential systems"*** means systems that supply 3 or more units.

1.17 **"Non-potable"** means a determination made through analysis that constituents that pose a health risk are present in levels exceeding existing standards.

1.18 ***"Notification"*** means the formal communication between HEALTH and the local public water supply agency and chief executive officer of the community if a private well shows contamination that threatens the local public water supply.

1.19 ***"Parameter"***, as used herein, includes, but is not limited to, a constituent, contaminant, substance, organic chemical, metal, analyte, attribute, or other measurable physical property that can be analyzed for in drinking water.

1.20 ***"Person"*** means an individual, partnership, association, corporation, or any other legal entity or group of individuals who has/have decision-making responsibilities for one (1) or more end-users.

1.21 ***"pH"*** means a measurement of the acidity (hydrogen ion concentration) in water. Measurement ranges from 0 (acidic) – 14 (basic) with 7 being neutral.

1.22 ***"Point-of-entry treatment"*** means water treatment that serves the entire house by treating water and reducing contaminants as it enters the structure.

1.23 ***"Point-of-use treatment"*** means water treatment that serves only a single tap and reduces contaminants at the discharge point only.

1.24 ***"Potable"*** means fit or suitable to drink.

1.25 ***"Potability"*** means the determination that water is potable and is safe for consumption.

1.26 ***"Private-drinking-water system"*** means a system that extracts groundwater from a well or well field (wells on one (1) or more properties), provides potable water for human consumption, and does not meet the requirements to be classified as a *public water system.* These systems also include commercial – mixed use, multi-family residential, single/duplex residential, and individual private systems.

1.27 ***"Private well"*** means a water well that can serve as a private drinking water system.

1.28 ***"Private well field"*** means a collection of private wells that serve a private drinking water system.

1.29 ***"Private well water testing report form"*** means a standardized form for the reporting of certified laboratory results to be disseminated to the well owner or client to determine if the water is potable.

1.30 ***"Public notification"*** means a general notice relayed by the appropriate agency reporting well test detections of constituents (that could increase health risks to adjoining neighboring real estate owners) and recommending cautionary testing for parameters of concern.

1.31 ***"Public water system"*** means a system for the provision to the public of water for human consumption through pipes or constructed conveyances; if such a system has at least fifteen (15) service connections or regularly serves at least twenty-five (25) individuals daily at least sixty (60) days out of the year.

1.32 ***"Recommended limit"*** means the optimal range of upper and/or lower limits for various constituents, such as pH, Iron, or Manganese.

1.33 ***"Residence"*** means the location where a person is a domestic end-user of the water prior to entering the wastewater flow system.

1.34 ***"Residential building"*** means a structure consisting of one (1) or more residences that has an existing certificate of occupancy, but shall not include any structure newly constructed that is awaiting a certificate of occupancy.

1.35 ***"Sampler"*** means an individual who has education/experience necessary to acquire drinking water samples for laboratory analysis by following appropriate methods that may be found in New England States' Common Sample Collection & Preservation Manual for Drinking Water.

1.36 ***"Secondary Maximum Contamination Level (SMCL)"*** means the acceptable level allowable for aesthetic purposes.

1.37 ***"Service connection"*** means the point in a water distribution system where water is diverted from a communal flow line to a specific end user or residential unit. Service connections may or may not be metered.

1.38 ***"Shared well"*** means a common well or well field that provides drinking water to more than one (1) residential unit, commercial enterprise, or any combination thereof.

1.39 ***"Single/duplex residential rental system"*** means a private system that serves a single or duplex residential rental property.

1.40 ***"Standard"*** means a water quality standard as defined herein.

1.41 ***"Transfer"*** means a change in property title resulting in a change in the end consumers of the water. It does not include foreclosures or modification of property titles as a result of divorce or other situation where the same parties will continue to have use of the water for consumption.

1.42 ***"Water quality standard or drinking water standard"*** means a standard that applies to a constituent required for testing pursuant to these rules and regulations.

1.43 ***"Wastewater flow system"*** means the system of collection, treatment, and discharge of water post end-user.

1.44 ***"Water well"*** means any hole or excavation that is constructed for the purpose of removal of water using standards set forth in Chapter 46-13.2 of the Rhode Island General Laws, as amended.

1.45 ***"Water-well permit"*** means written approval given by the local building official to permit the construction of a drinking water well at a given location for testing as a potable source of water, to replace an existing source, or prior to issuing a building permit for new construction.

1.46 ***"Well record"*** means the required submission of detailed information on the construction and hydro-geologic settings and properties of a new or improved well to the Rhode Island Department of Environmental Management (RIDEM), in accordance with Chapter 46-13.2 of the General Laws of Rhode Island, as amended.

Section 2.0 ***Coverage***

2.1 These regulations apply to any and all water-well systems that do not meet the definition of public water supply as defined by the "Rules and Regulations Pertaining to Public Drinking Water, [R46-13-DWQ]" of reference #1 herein and that supply water for human consumption.

Section 3.0 ***Private Water System Classifications***

3.1 ***Commercial/Mixed Use Private Water Systems***

Commercial/mixed use private water systems include, but are not limited to, small multi-unit commercial spaces or mixed-use (commercial/residential) buildings. This type of system provides potable water to tenants as part of some form of rental or lease agreement entered into by the owner of the system as part of a commercial enterprise.

3.2 ***Multi-Family Residential /Shared Well Private Water System***

Multi-family residential / shared well private water system designed to supply multiple residential units with potable water. These systems may include but are not limited to; small apartment buildings or multiple houses/condos on a shared well or private well field.

3.3 ***Single/Duplex Residential Rental Private Water System***

This type of system is designed to supply one or two tenants of record with potable water for consumption and use. The residential units (up to 2) associated with this type of system are not owner occupied.

3.4 ***Individual Private Water Systems***

This type of system is designed to supply an owner(s) and/or one tenant of record with potable water for consumption and use.

Section 4.0 **Classifications and Qualifications for Private Water System Professionals**

4.1 General Information

These regulations recognize three classifications of private-drinking water system professionals. They are: Water Samplers, Analytical Laboratories, and Interpreters. Each classification of professional shall possess the training, education, and experience as needed to either properly collect representative samples, analyze samples using accepted and

appropriate methodologies, or to interpret results, form opinions, and to report conclusions using professional judgment based on existing standards. Specific qualifications and requirements are as follows.

4.2 Water Samplers

Individuals responsible for acquiring samples for analysis need to properly prepare sampling ports, determine appropriate containers and preservatives, and draw and assure proper sample handling based on analyses requested.

a) Samplers shall at a minimum, have or obtained the following qualifications:
Eighteen (18) years of age or older;
Be of good moral character; and

i) A high school diploma/GED, successful completion of a technical sampling course and six (6) months work experience performing water quality fieldwork; or

ii) An associate's (or higher) degree in physical science or technical field, successful completion of a technical sampling course; or

iii) State certification as a Public Water Supply Treatment or Transmission and Distribution Operator under R23-65-DWQ; or

iv) Be employed, trained, and experienced in potable water sampling by an analytical lab certified by the Department to perform potability analysis in accordance with the "Rules and Regulations for Certifying Analytical Laboratories" reference #2 herein; or

v) Federal or State regulatory agencies will self-certify employees who perform sampling as a requirement of their job.

4.3 *Analytical Laboratories*

Only laboratories certified by the Department, in accordance with the "Rules and Regulations for Certifying Analytical Laboratories" of reference #3 herein shall be qualified to test private well samples for potability.

a) Laboratories shall possess analyte and method specific certificates for each category for which the laboratory is certified, as stated in RIGL 23-16.2-4.1.

b) In accordance with RIGL 23-16.2-13, it shall be unlawful for any analytical laboratory to perform testing or analyses of samples originating in this state, for

which the Department of Health requires certification, without having a certificate issued by the Department of Health.

4.4 ***Interpreters***

Interpreters shall possess sufficient training, education and experience needed to form opinions and draw conclusions using professional judgment. These opinions and conclusions shall be used to assist the property owner/buyer or building official to ensure that there is a feasible source of potable water available. In addition, the working knowledge of the interpreter will provide guidance on what actions, if any, are needed to treat or modify the water's chemical composition through the installation of either a Point-of-Entry or Point-of-Use treatment system. An interpreter shall have a combination of education and related experience as indicated below:

a) Be a Registered professional engineer licensed to practice in the State of Rhode Island; or

b) Be an environmental scientist / hydrogeologist holding a "Professional" category membership in the American Institute of Hydrology and/or the American Institute of Professional Geologists; or

c) Have a Bachelor's degree (or higher) in physical / earth science, or related field, with three (3) years experience performing interpretation of water quality data as they apply to set standards or similar activities; or

d) Associate's degree in physical / earth science or engineering field and five (5) years related experience.

Section 5.0 ***General Licensing Requirements***

5.1 The Department currently certifies analytical laboratories in accordance with the "Rules and Regulations for Certifying Analytical Laboratories" of reference #2 herein. Therefore, the following licensing requirements shall only apply to the water sampler and interpreter classifications. Government regulatory agencies can elect to self-certify government employees in the water-sampler classification for the purpose of performing work related duties. The Department retains the right to review, approve, or reject these certifications at any time.

5.2 No person shall act as a sampler or interpreter unless he or she is the holder of an appropriate and current license issued in accordance with the statutory provisions of the Act and the rules and regulations herein or is employed by a Department recognized self-certifying agency.

5.3 If disqualifying information, as presented in section 7.0, is found with respect to any person applying for licensure as a sampler or interpreter, then the department shall make a judgment regarding licensure of that person.

5.4 Application for licensure as a sampler or interpreter in this state shall be made on the forms provided by the Department. Such applications shall be accompanied by the following documents:

a) Proof of Right to Work:
   i) for U.S. born applicants, a certified or notarized copy of birth certificate;
   ii) for foreign-born applicants, proof of lawful entry into the country and eligibility for employment in the United States.

b) Good moral character: indicated by signing the application affidavit statement .

c) Non-conflict of Interest: Signed statement on application.

d) Supporting evidence of education and training requirements in accordance with the classification sought as per section 4 herein: such documentation must be sent directly from the school or training program to the Department, in addition;

One (1) unmounted recent photograph of the applicant (head and shoulder frontal view) approximately 2x3 inches in size, with a legal signature in blue ink on the reverse side;

Such other information as the Department may deem necessary.

Section 6.0 ***General Licensing Information***

6.1 The Director shall issue to applicants who have satisfactorily met the licensing requirements herein, a license to act as a sampler or interpreter in this state.

6.2 Sampler or interpreter licenses, unless sooner suspended or revoked, shall be valid for a period of five (5) years and shall expire on of the fifth year from the date of issuance thereafter.

6.3 Every person licensed who wishes to renew his or her license shall file a completed renewal application with the Department.

6.4 Any person who allows his or her certification to lapse by failing to renew it within 30 days of the anniversary date may be reinstated by the Director upon submission of an application, unless the license has been suspended or revoked.

6.5 Any person using the titles of “licensed sampler” or “licensed interpreter” or functioning as either during the time that his or her license has lapsed or been suspended or revoked shall be subject to the penalties for violation of the statutory and regulatory provisions herein.

Section 7.0 *Grounds for Denial, Revocation or Suspension of Licenses*

7.1 The Department may suspend, revoke, or refuse to renew the license of a Sampler or Interpreter for cause, including but not limited to, failure to maintain compliance with the above qualifications, repeated or intentional violations (such as falsification of samples or data) of the Act or these regulations, or conviction (including but not limited to a plea of nolo contendere) of a felony.

7.2 The Department may deny issuance of a license, suspend, revoke, or refuse to renew any license issued under the provisions of the Act and the regulations herein, or may reprimand, censure or otherwise discipline, or place an interpreter/sampler on probation, upon decision and after hearing and upon proof that the licensee engaged in unprofessional conduct which includes but is not limited to:

a) Has become unfit or incompetent by reason of negligence, habits, or other causes such as physical and mental impairment that would interfere with proper performance of duties;
b) Has engaged in fraud or deceit in the practice of sampling private well water or interpretation of private well water analytical results or in his or her admission to such practice;
c) Has been convicted in a court of competent jurisdiction, either within or without this state, of a felony;
d) Misconduct in professional practice;

7.3 If a sampler/interpreter is placed on probation, the Department may require the licensee to:

a) Report regularly to the Department on matters that are the basis of the probation;
b) Limit practice to the areas prescribed by the Department; or
c) Complete a prescribed program of continuing professional education until the licensee attains a degree of skill satisfactory to the Department in those areas that are the basis of the probation.

7.4 All hearings and reviews as may be required herein shall be conducted in accordance with the provisions of section 9.0 of these rules and regulations.

Section 8.0 ***Violations and Penalties***

8.1 Any violations as set forth in section 7.0 herein shall be cause for the Department to impose such sanctions, denial, revocation or suspension of licensure or imposing a reprimand or censure or such other disciplinary action.

Section 9.0 ***Rules Governing Practices and Procedures***

9.1 All hearings and reviews required under the provisions of Chapter 23-11-5.3 of the General Laws of Rhode Island, as amended, shall be held in accordance with the provisions of the Act and the *Rules and Regulations of the Rhode Island Department of Health Regarding Practices and Procedures Before the Rhode Island Department of Health and Access to Public Records of the Department of Health (R42-35-PP).*

Section 10.0 ***Adoption of Drinking Water Quality Standards for Private Wells***

10.1 To be consistent in protecting public health, analytical methodologies and water quality standards from the "Rules and Regulations Pertaining to Public Drinking Water, [R46-13-DWQ]" of reference #1 herein (standards also presented in Appendix A) shall be adopted for use among private-drinking water systems to determine potability or non-potability of water.

10.2 The constituents and corresponding limits presented in the "Rules and Regulations Pertaining to Public Drinking Water, [R46-13-DWQ]" will serve as the levels for determining exceedances of MCLs, SMCLs, and HAs for specific constituents listed.

Section 11.0 ***Mandatory Testing Requirements for Private Water Supplies***

11.1 ***Applicability***

All wells that will be used for potable water supply shall be tested:

a) before a certificate of occupancy may be granted for the building(s) it is intended to serve, whether new or previously occupied; and
b) prior to the sale or transfer (as defined herein) of ownership of real property.
c) whenever a new well or well field is installed that would serve as a new source to an existing building(s).

All wells subject to submission of a well record or local well permit shall be required to be tested as described in this section.

11.2 ***Minimum Testing Requirements***

At a minimum, all private wells subject to these regulations shall be required to test for those constituents presented in Table 1. Local building officials may add additional constituents based on their knowledge of local conditions or issues.

TABLE 1. – MINIMUM CONSTITUENTS AND TESTING REQUIREMENTS

Constituents*	**Testing Requirements** **(see guidance for testing frequency recommendations)**
Alkalinity (as $CaCO_3$)	For certificate of occupancy (new well for new or existing building) or transfer of real property
Total Coliform & Escherichia coli	
Hardness (as $CaCO_3$)	
Chloride	
Fluoride	
Iron	
Lead	
Manganese	
Nitrate/Nitrite	
pH	
Specific Conductance	
Sulfate	
Total Dissolved Solids	
Turbidity	
Volatile Organic Compounds (VOCs) **	
MTBE^	

***** – The minimal list of constituents needed for testing.

****** - At a minimum, must include the regulated VOCs listed in Table 16.2 (b) of the public drinking water regulations found in reference #1.

^ - No MCL available, Rhode Island State Health Advisory level at 40 ppb

11.3 ***New Private Water Systems***

a) Prior to being placed into service, the local building official shall classify all new private water systems or existing systems with new sources as commercial/mixed use, multi-family residential, single/duplex residential rental, or individual, as described in Section 3.0. This classification shall be used to determine recommended guidance on testing and reporting for systems by type.

b) All required testing shall be performed on the well water in preparation for issuance of Certificate of Occupancy. However, Communities (building officials) or well drilling regulations may require preliminary screening tests to be completed prior to issuance of a building permit or initiation of construction.

c) All required testing shall be performed after all plumbing and water-using appliances are in place and the system has been properly disinfected. The sampling point for this sample shall be an interior faucet that yields untreated (raw) well water. Any and all drinking water quality treatment systems in-place shall be identified and noted.

d) All water samples for lead analyses shall be acquired as "first draw" samples from the cold-water tap. Bubblers or drinking fountains shall not be satisfactory sampling points. Any and all treatment systems in-place shall be identified and noted.

11.4 ***Transfer of Existing Private Water Systems***

a) In conjunction with RIGL 5-20.8-12, during the transfer or sale of any real property, served by a well(s) or which has a well(s) capable of being placed into service as a drinking water source, the well water shall be tested for, at a minimum, those constituents contained in Table 1 herein and any other constituents detected during previous testing.

b) All water samples for lead analyses shall be acquired as "first draw" samples from the cold-water tap. Bubblers or drinking fountains shall not be satisfactory sampling points. Any and all treatment systems in-place shall be identified and noted.

c) Licensed interpreters shall interpret analytical results for compliance with adopted standards as stated within. Licensed interpreters shall submit letter reports containing their findings to their clients and the existing owners/designees.

d) The existing owner/designee shall make available for review to potential buyers/transferees, any and all letter reports and supporting data in owner/designee's possession that relate to the water quality of the property in question, for the prior ten (10) years.

Section 12.0 ***Data Reporting***

12.1 Interpreters licensed to review and report on private well water results shall be required to submit to the Department, reports of all detections (directly or via a certified laboratory) on all mandatory testing (as defined in section 10). These reports are required for inclusion of data into the private well module of the Department's database. (Initial submissions will be copies of reports sent to private well customers while the electronic data transmission interface is being developed).

12.2 All reports shall be submitted within 15 days of completion of analysis and will include an accurate and complete street address; Plat, Block, and Lot for the property on which the well is located, and GPS coordinates for the well itself, as well as complete analytical results for constituents in Table 1.

Section 13.0 ***Reporting Terms, Responses, and Notification Requirements***

13.1 The reporting terms presented in Table 2 are intended to provide clear, effective, and consistent communication between water quality professionals and system owners. Analytical laboratories may consider the use of these reporting terms as an additional option (beyond reporting numerical values). The reporting terms reflect a comparison of the detected levels to the existing limits for a given constituent. The constituent detected, level of detection, and corresponding reporting terms shall be used to determine the appropriate response. Reporting terms and recommended responses for all constituents shall be as follows:

TABLE 2. – REPORTING TERMS AND RESPONSES

Level of Detection (with respect to MCL or HA)	**Reporting Terms**	**Response***
Detect up to 50% MCL or HA	Present	Note presence – monitor on regular schedule
>50% up to MCL or HA	Action Level	Monitor with more frequent testing (perhaps ½ suggested testing interval) – consider remediation or treatment options
> MCL or HA but < 10x	Elevated[1]	Minimize ingestion and use bottled water. Water may still be used for other household purposes**. Retest immediately and seek remediation or treatment.
> Or = 10 x MCL or HA	Extremely Elevated	Discontinue use for all purposes
For SMCLs	Exceedance	Treatment is recommended not required

***** - Any obvious change in water quality shall dictate consultation and retesting.

****** - Continued use may be dependent on the nature of the constituent.

13.2 When the analytical result for a constituent is reported as "Present " with respect to MCLs and HAs as described in this section, the licensed interpreter shall:

a) Notify Department via a copy of the analytical report or by electronic data submission within fifteen (15) days of completion of analysis.

b) Notify the system owner of the constituent(s) present and what, if any appropriate response is needed.

13.3 When the analytical result for a constituent is reported as an "Action Level" or as "Elevated" with respect to MCLs and HAs as described in this section, the licensed interpreter shall:

a) Notify the Department,

b) Notify the system owner of the constituent(s) present and the appropriate response suggested or needed.

13.4 When the analytical result for a primary constituent is reported as "Extremely Elevated" with respect to MCLs and HAs as described in this section, the interpreter shall:

a) Immediately Notify the Department,

b) Immediately notify the system owner of the constituent(s) and level(s) present and appropriate responses needed.

Section 14.0 ***Corrective Actions***

14.1 Licensed interpreters, and/or Local Building Officials shall determine appropriate corrective actions based on the reported level(s) of the constituents in the untreated water from a private water system. Additional testing may be required to evaluate whether a proposed treatment system is the most effective means to remove a constituent that is potentially hazardous to health.

14.2 Corrective actions are categorized as follows:

a) **Immediate** corrective actions shall be used upon the discovery of well water that is at the elevated or extremely elevated levels. These levels shall require minimizing or eliminating consumptive use and ingestion of the water. Immediate corrective actions shall include, but are not limited to: the use of bottled water or water from a different potable source for consumptive purposes and may require the discontinued use of the contaminated well water for other household purposes.

b) **Short-term** corrective actions shall be instituted in conjunction with immediate corrective actions associated with the highly elevated or hazardous levels, in order to provide a potable supply of water. Short-term corrective actions shall be an interim step while long-term corrective actions are considered. Short-term corrective actions may include, but are not limited to use of bottled water, installation of a point-of use or point-of entry treatment system.

c) **Long-term** corrective actions shall be instituted after a study of the source and nature of the constituent(s) present has been completed. Long-term corrective action options include: acquiring a new source, installation of a point-of use or point-of entry treatment system, or connection to public water supply.

Section 15.0 ***Staged Implementation***

15.1 Licensing Schedule – The licensure requirements of sections five and six contained herein shall take effect three months after promulgation of these regulations. The state certification program currently certifies laboratories.

15.2 Schedule for Reporting of Results – pending development of an electronic data reporting interface, paper reports showing results will be submitted to the Department for review and inclusion into the private well database.

a) Voluntary submissions will be accepted as soon as regulations are promulgated.

b) Mandatory submissions for new construction will be required beginning three months after promulgation of the regulations.

c) Mandatory submissions for property transfers will be required beginning six months after promulgation of the regulations.

16.0 ***Severability***

16.1 If any provision of these rules and regulations or the application thereof to any person or circumstances shall be held invalid, such invalidity shall not affect the provisions or application of the rules and regulations which can be given effect, and to this end the provisions of the rules and regulations are declared to be severable.

Section 17.0 ***References***

1. Rhode Island Department of Health, *"Rules and Regulations Pertaining to Public Drinking Water (R46-13-DWQ)"*, Providence, RI, As Amended
2. Rhode Island Department of Health, *"Rules and Regulations of the Rhode Island Department of Health Regarding Practices and Procedures Before the Department of Health and Access to Public Records of the Department of Health (R42-35-PP)"*, Providence, RI, As Amended. Available online at: http://www2.sec.state.ri.us/dar/regdocs/released/pdf/DOH/DOH_2945.pdf
3. Rhode Island Department of Health, *"Rules and Regulations for Certifying Analytical Laboratories (R23-16.2-A/Lab)"*, Providence, RI, As Amended

APPENDIX A – Potability Standards for Private Wells in Rhode Island

National Primary Drinking Water Standards

Adapted from http://www.epa.gov/safewater/contaminants/index.html#listmcl

Microorganisms – Primary concern for private wells are presence of total and fecal coliforms. Balance of constituents presented for completeness.

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Cryptosporidium (pdf file)	zero	TT [3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and fecal animal waste
Giardia lamblia	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste
Heterotrophic plate count	n/a	TT[3]	HPC has no health effects; it is an analytic method used to measure the variety of bacteria that are common in water. The lower the concentration of bacteria in drinking water, the better maintained the water system is.	HPC measures a range of bacteria that are naturally present in the environment
Legionella	zero	TT[3]	Legionnaire's Disease, a type of pneumonia	Found naturally in water; multiplies in heating systems
Total Coliforms (including fecal coliform and *E. Coli*)	zero	5.0%[4]	Not a health threat in itself; it is used to indicate whether other potentially harmful bacteria may be present[5]	Coliforms are naturally present in the environment; as well as feces; fecal

				coliforms and *E. coli* only come from human and animal fecal waste.
Turbidity	n/a	TT[3]	Turbidity is a measure of the cloudiness of water. It is used to indicate water quality and filtration effectiveness (e.g., whether disease-causing organisms are present). Higher turbidity levels are often associated with higher levels of disease-causing microorganisms such as viruses, parasites and some bacteria. These organisms can cause symptoms such as nausea, cramps, diarrhea, and associated headaches.	Soil runoff
Viruses (enteric)	zero	TT[3]	Gastrointestinal illness (e.g., diarrhea, vomiting, cramps)	Human and animal fecal waste

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Disinfection Byproducts - Seldom an issue with private wells, unless the private system has a disinfection system.

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Bromate	zero	0.010	Increased risk of cancer	Byproduct of drinking water disinfection
Chlorite	0.8	1.0	Anemia; infants & young children: nervous system effects	Byproduct of drinking water disinfection

Haloacetic acids (HAA5)	n/a[6]	0.060	Increased risk of cancer	Byproduct of drinking water disinfection
Total Trihalomethanes (TTHMs)	none[7] --- n/a[6]	0.10 --- 0.080	Liver, kidney or central nervous system problems; increased risk of cancer	Byproduct of drinking water disinfection

Disinfectants – Seldom an issue, unless the well and water system have recently been disinfected.

Contaminant	MRDLG[1] (mg/L)[2]	MRDL[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Chloramines (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort, anemia	Water additive used to control microbes
Chlorine (as Cl_2)	MRDLG=4[1]	MRDL=4.0[1]	Eye/nose irritation; stomach discomfort	Water additive used to control microbes
Chlorine dioxide (as ClO_2)	MRDLG=0.8[1]	MRDL=0.8[1]	Anemia; infants & young children: nervous system effects	Water additive used to control microbes

Inorganic Chemicals

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Antimony	0.006	0.006	Increase in blood cholesterol; decrease in blood sugar	Discharge from petroleum refineries; fire retardants; ceramics; electronics; solder
Arsenic	0[7]	0.010	Skin damage or problems with	Erosion of natural deposits; runoff

		as of 01/23/06	circulatory systems, and may have increased risk of getting cancer	from orchards, runoff from glass & electronic production wastes
Asbestos (fiber >10 micrometers)	7 million fibers per liter	7 MFL	Increased risk of developing benign intestinal polyps	Decay of asbestos cement in water mains; erosion of natural deposits
Barium	2	2	Increase in blood pressure	Discharge of drilling wastes; discharge from metal refineries; erosion of natural deposits
Beryllium	0.004	0.004	Intestinal lesions	Discharge from metal refineries and coal-burning factories; discharge from electrical, aerospace, and defense industries
Cadmium	0.005	0.005	Kidney damage	Corrosion of galvanized pipes; erosion of natural deposits; discharge from metal refineries; runoff from waste batteries and paints
Chromium (total)	0.1	0.1	Allergic dermatitis	Discharge from steel and pulp mills; erosion of natural deposits
Copper	1.3	TT[8]; Action Level=1.3	Short term exposure: Gastrointestinal distress Long term exposure: Liver or kidney damage People with Wilson's Disease should consult their personal doctor if the	Corrosion of household plumbing systems; erosion of natural deposits

			amount of copper in their water exceeds the action level	
Cyanide (as free cyanide)	0.2	0.2	Nerve damage or thyroid problems	Discharge from steel/metal factories; discharge from plastic and fertilizer factories
Fluoride	4.0	4.0	Bone disease (pain and tenderness of the bones); Children may get mottled teeth	Water additive which promotes strong teeth; erosion of natural deposits; discharge from fertilizer and aluminum factories
Lead	zero	TT[8]; Action Level=0.015	Infants and children: Delays in physical or mental development; children could show slight deficits in attention span and learning abilities Adults: Kidney problems; high blood pressure	Corrosion of household plumbing systems; erosion of natural deposits
Mercury (inorganic)	0.002	0.002	Kidney damage	Erosion of natural deposits; discharge from refineries and factories; runoff from landfills and croplands
Nitrate (measured as Nitrogen)	10	10	Infants below the age of six months who drink water containing nitrate in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	Runoff from fertilizer use; leaching from septic tanks, sewage; erosion of natural deposits
Nitrite (measured as	1	1	Infants below the age of six months	Runoff from fertilizer use; leaching

Nitrogen)			who drink water containing nitrite in excess of the MCL could become seriously ill and, if untreated, may die. Symptoms include shortness of breath and blue-baby syndrome.	from septic tanks, sewage; erosion of natural deposits
Selenium	0.05	0.05	Hair or fingernail loss; numbness in fingers or toes; circulatory problems	Discharge from petroleum refineries; erosion of natural deposits; discharge from mines
Thallium	0.0005	0.002	Hair loss; changes in blood; kidney, intestine, or liver problems	Leaching from ore-processing sites; discharge from electronics, glass, and drug factories

Organic Chemicals

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Acrylamide	zero	TT[9]	Nervous system or blood problems; increased risk of cancer	Added to water during sewage/wastewater treatment
Alachlor	zero	0.002	Eye, liver, kidney or spleen problems; anemia; increased risk of cancer	Runoff from herbicide used on row crops
Atrazine	0.003	0.003	Cardiovascular system or reproductive problems	Runoff from herbicide used on row crops
Benzene	zero	0.005	Anemia; decrease in blood platelets;	Discharge from

			increased risk of cancer	factories; leaching from gas storage tanks and landfills
Benzo(a)pyrene (PAHs)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Leaching from linings of water storage tanks and distribution lines
Carbofuran	0.04	0.04	Problems with blood, nervous system, or reproductive system	Leaching of soil fumigant used on rice and alfalfa
Carbon tetrachloride	zero	0.005	Liver problems; increased risk of cancer	Discharge from chemical plants and other industrial activities
Chlordane	zero	0.002	Liver or nervous system problems; increased risk of cancer	Residue of banned termiticide
Chlorobenzene	0.1	0.1	Liver or kidney problems	Discharge from chemical and agricultural chemical factories
2,4-D	0.07	0.07	Kidney, liver, or adrenal gland problems	Runoff from herbicide used on row crops
Dalapon	0.2	0.2	Minor kidney changes	Runoff from herbicide used on rights of way
1,2-Dibromo-3-chloropropane (DBCP)	zero	0.0002	Reproductive difficulties; increased risk of cancer	Runoff/leaching from soil fumigant used on

				soybeans, cotton, pineapples, and orchards
o-Dichlorobenzene	0.6	0.6	Liver, kidney, or circulatory system problems	Discharge from industrial chemical factories
p-Dichlorobenzene	0.075	0.075	Anemia; liver, kidney or spleen damage; changes in blood	Discharge from industrial chemical factories
1,2-Dichloroethane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical factories
1,1-Dichloroethylene	0.007	0.007	Liver problems	Discharge from industrial chemical factories
cis-1,2-Dichloroethylene	0.07	0.07	Liver problems	Discharge from industrial chemical factories
trans-1,2-Dichloroethylene	0.1	0.1	Liver problems	Discharge from industrial chemical factories
Dichloromethane	zero	0.005	Liver problems; increased risk of cancer	Discharge from drug and chemical factories
1,2-Dichloropropane	zero	0.005	Increased risk of cancer	Discharge from industrial chemical

				factories
Di(2-ethylhexyl) adipate	0.4	0.4	Weight loss, liver problems, or possible reproductive difficulties.	Discharge from chemical factories
Di(2-ethylhexyl) phthalate	zero	0.006	Reproductive difficulties; liver problems; increased risk of cancer	Discharge from rubber and chemical factories
Dinoseb	0.007	0.007	Reproductive difficulties	Runoff from herbicide used on soybeans and vegetables
Dioxin (2,3,7,8-TCDD)	zero	0.00000003	Reproductive difficulties; increased risk of cancer	Emissions from waste incineration and other combustion; discharge from chemical factories
Diquat	0.02	0.02	Cataracts	Runoff from herbicide use
Endothall	0.1	0.1	Stomach and intestinal problems	Runoff from herbicide use
Endrin	0.002	0.002	Liver problems	Residue of banned insecticide
Epichlorohydrin	zero	TT[9]	Increased cancer risk, and over a long period of time, stomach problems	Discharge from industrial chemical factories; an impurity of some water treatment chemicals
Ethylbenzene	0.7	0.7	Liver or kidneys problems	Discharge from

				petroleum refineries
Ethylene dibromide	zero	0.00005	Problems with liver, stomach, reproductive system, or kidneys; increased risk of cancer	Discharge from petroleum refineries
Glyphosate	0.7	0.7	Kidney problems; reproductive difficulties	Runoff from herbicide use
Heptachlor	zero	0.0004	Liver damage; increased risk of cancer	Residue of banned termiticide
Heptachlor epoxide	zero	0.0002	Liver damage; increased risk of cancer	Breakdown of heptachlor
Hexachlorobenzene	zero	0.001	Liver or kidney problems; reproductive difficulties; increased risk of cancer	Discharge from metal refineries and agricultural chemical factories
Hexachlorocyclopentadiene	0.05	0.05	Kidney or stomach problems	Discharge from chemical factories
Lindane	0.0002	0.0002	Liver or kidney problems	Runoff/leaching from insecticide used on cattle, lumber, gardens
Methoxychlor	0.04	0.04	Reproductive difficulties	Runoff/leaching from insecticide used on fruits, vegetables, alfalfa, livestock
Oxamyl (Vydate)	0.2	0.2	Slight nervous system effects	Runoff/leaching from

				insecticide used on apples, potatoes, and tomatoes
Polychlorinated biphenyls (PCBs)	zero	0.0005	Skin changes; thymus gland problems; immune deficiencies; reproductive or nervous system difficulties; increased risk of cancer	Runoff from landfills; discharge of waste chemicals
Pentachlorophenol	zero	0.001	Liver or kidney problems; increased cancer risk	Discharge from wood preserving factories
Picloram	0.5	0.5	Liver problems	Herbicide runoff
Simazine	0.004	0.004	Problems with blood	Herbicide runoff
Styrene	0.1	0.1	Liver, kidney, or circulatory system problems	Discharge from rubber and plastic factories; leaching from landfills
Tetrachloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from factories and dry cleaners
Toluene	1	1	Nervous system, kidney, or liver problems	Discharge from petroleum factories
Toxaphene	zero	0.003	Kidney, liver, or thyroid problems; increased risk of cancer	Runoff/leaching from insecticide used on cotton and cattle
2,4,5-TP (Silvex)	0.05	0.05	Liver problems	Residue of banned herbicide

1,2,4-Trichlorobenzene	0.07	0.07	Changes in adrenal glands	Discharge from textile finishing factories
1,1,1-Trichloroethane	0.20	0.2	Liver, nervous system, or circulatory problems	Discharge from metal degreasing sites and other factories
1,1,2-Trichloroethane	0.003	0.005	Liver, kidney, or immune system problems	Discharge from industrial chemical factories
Trichloroethylene	zero	0.005	Liver problems; increased risk of cancer	Discharge from metal degreasing sites and other factories
Vinyl chloride	zero	0.002	Increased risk of cancer	Leaching from PVC pipes; discharge from plastic factories
Xylenes (total)	10	10	Nervous system damage	Discharge from petroleum factories; discharge from chemical factories

Radionuclides ***Gross Alpha may be recommended for specfic geographical areas.***

Contaminant	MCLG[1] (mg/L)[2]	MCL or TT[1] (mg/L)[2]	Potential Health Effects from Ingestion of Water	Sources of Contaminant in Drinking Water
Alpha particles	none[7] ---------- zero	15 picocuries per Liter (pCi/L)	Increased risk of cancer	Erosion of natural deposits of certain minerals that are radioactive and may emit a form of radiation known as

				alpha radiation
Beta particles and photon emitters	none[7] ---------- zero	4 millirems per year	Increased risk of cancer	Decay of natural and man-made deposits of certain minerals that are radioactive and may emit forms of radiation known as photons and beta radiation
Radium 226 and Radium 228 (combined)	none[7] ---------- zero	5 pCi/L	Increased risk of cancer	Erosion of natural deposits
Uranium	zero	30 ug/L as of 12/08/03	Increased risk of cancer, kidney toxicity	Erosion of natural deposits

Notes

[1] Definitions:

Maximum Contaminant Level (MCL) - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to MCLGs as feasible using the best available treatment technology and taking cost into consideration. MCLs are enforceable standards.

Maximum Contaminant Level Goal (MCLG) - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety and are non-enforceable public health goals.

Maximum Residual Disinfectant Level (MRDL) - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

Maximum Residual Disinfectant Level Goal (MRDLG) - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

Treatment Technique - A required process intended to reduce the level of a contaminant in drinking water.

[2] Units are in milligrams per liter (mg/L) unless otherwise noted. Milligrams per liter are equivalent to parts per million.

[3] EPA's surface water treatment rules require systems using surface water or ground water under the direct influence of surface water to (1) disinfect their water, and (2) filter their water or meet criteria for avoiding filtration so that the following contaminants are controlled at the following levels:

- Cryptosporidium: (as of1/1/02 for systems serving >10,000 and 1/14/05 for systems serving <10,000) 99% removal.
- Giardia lamblia: 99.9% removal/inactivation
- Viruses: 99.99% removal/inactivation
- Legionella: No limit, but Rhode Island Department of Health believes that if *Giardia* and viruses are removed/inactivated, *Legionella* will also be controlled.
- Turbidity: At no time can turbidity (cloudiness of water) go above 5 nephelolometric turbidity units (NTU); systems that filter must ensure that the turbidity go no higher than 1 NTU (0.5 NTU for conventional or direct filtration) in at least 95% of the daily samples in any month. As of January 1, 2002, turbidity may never exceed 1 NTU, and must not exceed 0.3 NTU in 95% of daily samples in any month.
- HPC: No more than 500 bacterial colonies per milliliter.
- Long Term 1 Enhanced Surface Water Treatment (Effective Date: January 14, 2005); Surface water systems or (GWUDI) systems serving fewer than 10,000 people must comply with the applicable Long Term 1 Enhanced Surface Water Treatment Rule provisions (e.g. turbidity standards, individual filter monitoring, Cryptosporidium removal requirements, updated watershed control requirements for unfiltered systems).
- Filter Backwash Recycling; The Filter Backwash Recycling Rule requires systems that recycle to return specific recycle flows through all processes of the system's existing conventional or direct filtration system or at an alternate location approved by the state.

[4] more than 5.0% samples total coliform-positive in a month. (For water systems that collect fewer than 40 routine samples per month, no more than one sample can be total coliform-positive per month.) Every sample that has total coliform must be analyzed for either fecal coliforms or E. coli if two consecutive TC-positive samples, and one is also positive for E.coli fecal coliforms, system has an acute MCL violation.

[5] Fecal coliform and E. coli are bacteria whose presence indicates that the water may be contaminated with human or animal wastes. Disease-causing microbes (pathogens) in these wastes can cause diarrhea, cramps, nausea, headaches, or other symptoms. These pathogens may pose a special health risk for infants, young children, and people with severely compromised immune systems.

[6] Although there is no collective MCLG for this contaminant group, there are individual MCLGs for some of the individual contaminants:

- Trihalomethanes: bromodichloromethane (zero); bromoform (zero); dibromochloromethane (0.06 mg/L). Chloroform is regulated with this group but has no MCLG.
- Haloacetic acids: dichloroacetic acid (zero); trichloroacetic acid (0.3 mg/L). Monochloroacetic acid, bromoacetic acid, and dibromoacetic acid are regulated with this group but have no MCLGs.

[7] MCLGs were not established before the 1986 Amendments to the Safe Drinking Water Act. Therefore, there is no MCLG for this contaminant.
[8] Lead and copper are regulated by a Treatment Technique that requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the action level, water systems must take additional steps. For copper, the action level is 1.3 mg/L, and for lead is 0.015 mg/L.
[9] Each water system must certify, in writing, to the state (using third-party or manufacturer's certification) that when acrylamide and epichlorohydrin are used in drinking water systems, the combination (or product) of dose and monomer level does not exceed the levels specified, as follows:

- Acrylamide = 0.05% dosed at 1 mg/L (or equivalent)
- Epichlorohydrin = 0.01% dosed at 20 mg/L (or equivalent)

National Secondary Drinking Water Regulations

National Secondary Drinking Water Regulations (NSDWRs or secondary standards) are non-enforceable guidelines regulating contaminants that may cause cosmetic effects (such as skin or tooth discoloration) or aesthetic effects (such as taste, odor, or color) in drinking water.Rhode Island Department of Health recommends secondary standards to water systems but does not require systems to comply.

- National Secondary Drinking Water Regulations **-** The complete regulations regarding these contaminants availible from the Code of Federal Regulations Web Site.
- For more information, read Secondary Drinking Water Regulations: Guidance for Nuisance Chemicals.

(1) List of National Secondary Drinking Water Regulations

Contaminant	Secondary Standard
Aluminum	0.05 to 0.2 mg/L
Chloride	250 mg/L
Color	15 (color units)
Copper	1.0 mg/L
Corrosivity	noncorrosive
Fluoride	2.0 mg/L
Foaming Agents	0.5 mg/L
Iron	0.3 mg/L
Manganese	0.05 mg/L

Odor	3 threshold odor number
pH	6.5-8.5
Silver	0.10 mg/L
Sulfate	250 mg/L
Total Dissolved Solids	500 mg/L
Zinc	5 mg/L